INTEL 3rd Generation Core i Series
Processor ATX Industrial Motherboard

GMB-Q7710-LLVA

User's Manual

CONTEC

CONTEC CO., LTD.

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Revision History

Revision	Revision History	Date
V2.1	For PCB v2.x	2014/03

Safety Instructions

- Always read the safety instructions carefully.
- Keep this User's Manual for future reference.
- Keep this equipment away from humidity.
- Lay this equipment on a reliable flat surface before setting it up.
- The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
- Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
- Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
- Always Unplug the Power Cord before inserting any add-on card or module.
- All cautions and warnings on the equipment should be noted.
- Never pour any liquid into the opening that could damage or cause electrical shock.
- If any of the following situations arises, get the equipment checked by service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment does not work well or you can not get it work according to User's Manual.
  - The equipment has dropped and damaged.
  - The equipment has obvious sign of breakage.
- DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 80°C (176°F), IT MAY DAMAGE THE EQUIPMENT.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

警告使用者:

這是甲類資訊產品，在居住的環境中使用時，可能會造成無線電干擾，在這種情況下，使用者會被要求採取某些適當的對策。

廢電池請回收
For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

CE Conformity

Hereby, we declare that this device is in compliance with the essential safety requirements and other relevant provisions set out in the European Directive.

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed below:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

NOTICE 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTICE 2

Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

WEEE Statement

ENGLISH

Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, which takes effect on August 13, 2005, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life.

DEUTSCH

Gemäß der Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte dürfen Elektro- und Elektronik-Altgeräte nicht mehr als kommunale Abfälle entsorgt werden. Wir haben europaweit verschiedene Sammel- und Recyclingunternehmen beauftragt, die in die Europäische Union in Verkehr gebrachten Produkte, am Ende seines Lebenszyklus zurückzunehmen. Bitte entsorgen Sie dieses Produkt zum gegebenen Zeitpunkt ausschliesslich an einer lokalen Altgerätesammelstelle in Ihrer Nähe.

FRANÇAIS

Au sujet de la directive européenne (EU) relative aux déchets des équipement électriques et électroniques, directive 2002/96/EC, prenant effet le 13 août 2005, que les produits électriques et électroniques ne peuvent être déposés dans les décharges ou tout simplement mis à la poubelle. Les fabricants de ces équipements seront obligés de récupérer certains produits en fin de vie. Par conséquent vous pouvez retourner localement ces matériels dans les points de collecte.

РУССКИЙ

В соответствии с директивой Европейского Союза (ЕС) по предотвращению загрязнения окружающей среды использованным электрическим и электронным оборудованием (директива WEEE 2002/96/EC), вступающей в силу 13 августа 2005 года, изделия, относящиеся к электрическому и электронному оборудованию, не могут рассматриваться как бытовой мусор, поэтому производители вышеперечисленного электронного оборудования обязаны принимать его для переработки по окончании срока службы.

ESPAÑOL

Bajo la directiva 2002/96/EC de la Unión Europea en materia de desechos y/o equipos electrónicos, con fecha de rigor desde el 13 de agosto de 2005, los productos clasificados como "eléctricos y equipos electrónicos" no pueden ser depositados en los contenedores habituales de su municipio, los fabricantes de equipos electrónicos, están obligados a hacerse cargo de dichos productos al termino de su período de vida.

NEDERLANDS

De richtlijn van de Europese Unie (EU) met betrekking tot Vervuiling van Electrische en Electronische producten (2002/96/EC), die op 13 Augustus 2005 in zal gaan kunnen niet meer beschouwd worden als vervuiling. Fabrikanten van dit soort producten worden verplicht om producten retour te nemen aan het eind van hun levenscyclus.

SRPSKI

Po Direktivi Evropske unije (“EU”) o odbačenoj ekektronskoj i električnoj opremi, Direktiva 2002/96/EC, koja stupa na snagu od 13. Avgusta 2005, proizvodi koji spadaju pod “elektronsku i električnu opremu” ne mogu više biti odbačeni kao običan otpad i proizvođači ove opreme biće prinuđeni da uzmu natrag ove proizvode na kraju njihovog uobičajenog veka trajanja.

POLSKI

Zgodnie z Dyrektywą Unii Europejskiej (“UE”) dotyczącą odpadów produktów elektrycznych i elektronicznych (Dyrektywa 2002/96/EC), która wchodzi w życie 13 sierpnia 2005, tzw. “produkty oraz wyposażenie elektryczne i elektroniczne “ nie mogą być traktowane jako śmieci komunalne, tak więc producenci tych produktów będą zobowiązani do odbierania ich w momencie gdy produkt jest wycofywany z użycia.

TÜRKÇE

Avrupa Birliği (AB) Kararnamesi Elektrik ve Elektronik Malzeme Atığı, 2002/96/EC Kararnamesi altında 13 Ağustos 2005 tarihinden itibaren geçerli olmak üzere, elektrikli ve elektronik malzemeler diğer atıklar gibi çöpe atılamayacak ve bu elektonik cihazların üreticileri, cihazların kullanım süreleri bittikten sonra ürünleri geri toplamakla yükümlü olacaktır.

ČESKY

Podle směrnice Evropské unie (“EU”) o likvidaci elektrických a elektronických výrobků 2002/96/EC platné od 13. srpna 2005 je zakázáno likvidovat “elektrické a elektronické výrobky” v běžném komunálním odpadu a výrobci elektronických výrobků, na které se tato směrnice vztahuje, budou povinni odebírat takové výrobky zpět po skončení jejich životnosti.

MAGYAR

Az Európai Unió („EU”) 2005. augusztus 13-án hatályba lépő, az elektromos és elektronikus berendezések hulladékairól szóló 2002/96/EK irányelve szerint az elektromos és elektronikus berendezések többé nem kezelhetőek lakossági hulladékként, és az ilyen elektronikus berendezések gyártói kötelessé válnak az ilyen termékek visszavételére azok hasznos élettartama végén.

ITALIANO

In base alla Direttiva dell’Unione Europea (EU) sullo Smaltimento dei Materiali Elettrici ed Elettronici, Direttiva 2002/96/EC in vigore dal 13 Agosto 2005, prodotti appartenenti alla categoria dei Materiali Elettrici ed Elettronici non possono più essere eliminati come rifiuti municipali: i produttori di detti materiali saranno obbligati a ritirare ogni prodotto alla fine del suo ciclo di vita.

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Chapter 1
Overview

Thank you for choosing GMB-Q7710-LLVA, an excellent industrial computer board.

Based on the innovative **Intel® Panther Point** chipset for optimal system efficiency, GMB-Q7710-LLVA supports Ivy Bridge and Sandy Bridge processor series in socket LGA1155 and supports up to four DDR3 1066/1333/1600 UDIMM slots to provide the maximum of 32GB memory capacity.

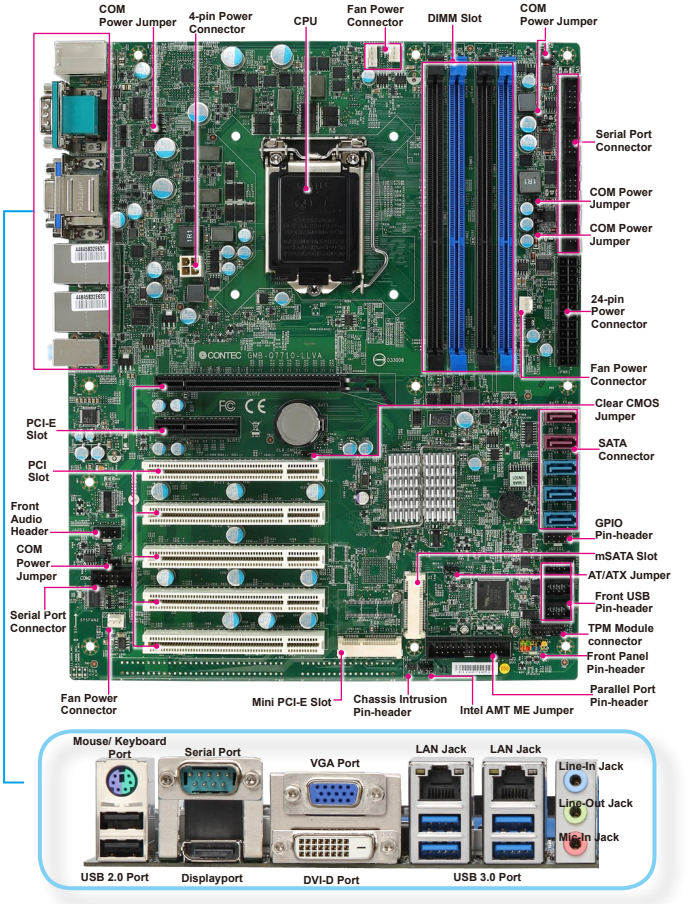
In the advanced-level and mid-range market segment, GMB-Q7710-LLVA provides a high-performance solution for today's front-end and general purpose workstation, as well as in the future.

Mainboard Specifications

CPU (Optional)	■ Intel Ivy Bridge series and Sandy Bridge series processor in socket LGA1155
Chipset	■ Intel Q77 PCH ■ Support iAMT 8.0
Memory	■ 4 DDR3 1066/1333/1600 UDIMM slots ■ Supports the maximum of 32GB
LAN	■ Gigabit Fast Ethernet by Intel 82579LM PHY & 82583V GbE controllers
SATA	■ 3 SATA 3Gb/s ports by Intel Cougar Point ■ 2 SATA 6Gb/s ports by Intel Cougar Point
RAID	■ SATA1~5 support Intel Rapid Storage Technology (AHCI/ RAID 0/ 1/ 5/ 10) by Intel Panther Point
Audio	■ HDA Codec by Realtek® ALC887 ■ Compliant with Azalia 1.0 specs
Graphics	■ Support by the installed processor - Support 3 independent displays by Ivy Bridge series - Support 2 independent displays by Sandy Bridge series
Back Panel I/O	■ 1 PS/2 mouse/ keyboard port ■ 1 VGA port ■ 1 DVI-D port ■ 1 Serial port ■ 1 Displayport ■ 2 Gigabit LAN jacks ■ 2 USB 2.0 ports ■ 4 USB 3.0 ports ■ 1 Line-In audio jack ■ 1 Line-Out audio jack ■ 1 Mic-In audio jack

Onboard Connectors/ Pinheaders	■ 3 USB 2.0 pin-headers ■ 5 Serial port connectors ■ 1 GPIO pin-header ■ 1 Front Audio pin-header ■ 1 Chassis Intrusion pin-header ■ 1 Parallel Port pin-header ■ 1 TPM Module connector (optional) ■ 1 Front Panel pin-header
Slot	■ 1 PCIe x16 slot ■ 1 PCIe x4 slot ■ 1 Mini-PCIe slot ■ 1 mSATA slot ■ 5 PCI slots ■ 1 ISA slot (optional)
Form Factor	■ ATX: 305mm x 244mm
Environ-mental	■ Operating Temperature: 0°C to 60°C ■ Storage Temperature: -20°C to 80°C ■ Humidity: 5% ~ 95% RH, Non-Condensing

Mainboard Layout



Chapter 2
Hardware Setup

This chapter provides you with the information on mainboard hardware configurations. Incorrect setting of jumpers and connectors may damage your mainboard. Please pay special attention not to connect these headers in wrong direction. DO NOT adjust any jumper while the mainboard is powered on.

Components Reference Guide

Port Name	Port Type	Page
CPU	LGA 1155 CPU Socket	2-3
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JPWR1~2	ATX Power Connectors	2-8
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ISA1	ISA Slot	2-21
MPCIE1	Mini PCIE Slot	2-21
MSATA1	mSATA Slot	2-21

CPU (Central Processing Unit)

When you are installing the CPU, make sure that you install the cooler to prevent overheating. If you do not have the CPU cooler, consult your dealer before turning on the computer.

Important

Overheating

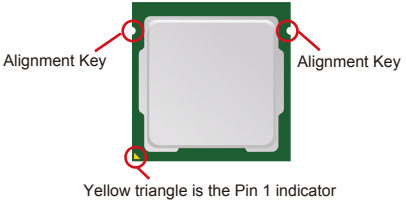
Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating. Make sure that you apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.

Replacing the CPU

While replacing the CPU, always turn off the power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.

Introduction to LGA 1155 CPU

The surface of LGA 1155 CPU. Remember to apply some thermal paste on it for better heat dispersion.

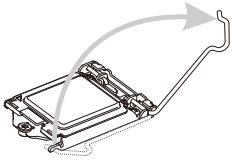


CPU & Cooler Installation

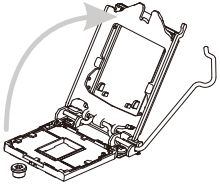
When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating**. Meanwhile, do not forget to apply some thermal paste on CPU before installing the heat sink/cooler fan for better heat dispersion.

Follow the steps below to install the CPU & cooler correctly. Wrong installation will cause damage to your CPU & mainboard.

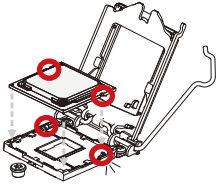
1. Open the load lever.



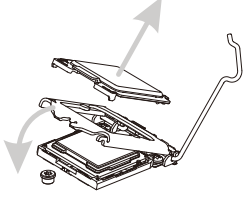
2. Lift the load lever up to fully open position.



3. After confirming the CPU direction for correct mating, put down the CPU in the socket housing frame. Be sure to grasp on the edge of the CPU base. Note that the alignment keys are matched.



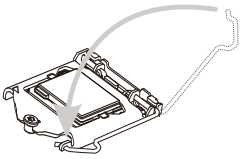
4. Remove the plastic cap. Engage the load lever while pressing down lightly onto the load plate.



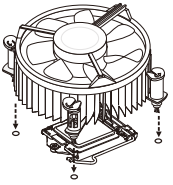
Important

Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with pure vertical motion and reinstall.

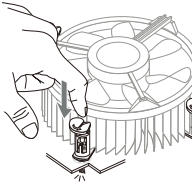
5. Secure the lever near the hook end under the retention tab.



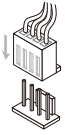
6. Make sure the four hooks are in proper position before you install the cooler. Align the holes on the mainboard with the cooler. Push down the cooler until its four clips get wedged into the holes of the mainboard.



7. Press the four hooks down to fasten the cooler. Turn over the mainboard to confirm that the clip-ends are correctly inserted.



8. Finally, attach the CPU Fan cable to the CPU fan connector on the mainboard.

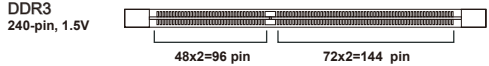


Important

- *Confirm if your CPU cooler is firmly installed before turning on your system.*
- *Do not touch the CPU socket pins to avoid damaging.*
- *Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered to avoid damaging.*
- *Please refer to the documentation in the CPU cooler package for more details about the CPU cooler installation.*

Memory

These DIMM slots are intended for memory modules.

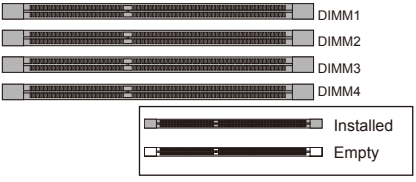


Dual-Channel mode Population Rule

In Dual-Channel mode, the memory modules can transmit and receive data with two data bus lines simultaneously. Enabling Dual-Channel mode can enhance the system performance. The following illustrations explain the population rules for Dual-Channel mode.

1

2



Installing Memory Modules

1. The memory module has only one notch on the center and will only fit in the right orientation.
2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot. **You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.**
3. The plastic clip at each side of the DIMM slot will automatically close.

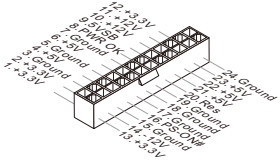
Important

- *DDR3 memory modules are not interchangeable with DDR2 and the DDR3 standard is not backwards compatible. You should always install DDR3 memory modules in the DDR3 DIMM slots.*
- *To enable successful system boot-up, always insert the memory modules into the DIMM1 first.*

Power Supply

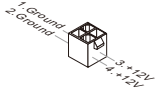
24-Pin Power Connector: JPWR1

This connector allows you to connect an 24-pin power supply. To connect the 24-pin power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.



4-Pin Power Connector: JPWR2

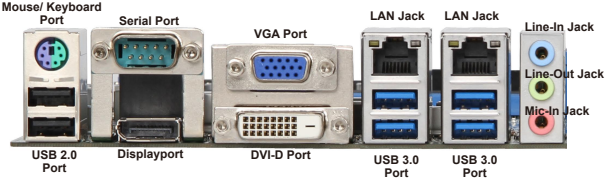
This 12V power connector is used to provide power to the CPU.



Important

Make sure that all the connectors are connected to proper ATX power supplies to ensure stable operation of the mainboard.

Back Panel I/O



- **Mouse/Keyboard Port**

The standard PS/2 mouse/keyboard DIN connector is for a PS/2 mouse/ keyboard.

- **VGA Port**

The DB15-pin female connector is provided for monitor.

- **DVI-D Port**

The DVI-D (Digital Visual Interface-Digital) connector allows you to connect an LCD monitor. It provides a high-speed digital interconnection between the computer and its display device. To connect an LCD monitor, simply plug your monitor cable into the DVI connector, and make sure that the other end of the cable is properly connected to your monitor (refer to your monitor manual for more information.)

- **DisplayPort**

DisplayPort is a digital display interface standard. This connector is used to connect a monitor with DisplayPort inputs.

- **USB 2.0 Port**

The USB 2.0 port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices. Supports data transfer rate up to 480Mbit/s (Hi-Speed).

- **USB 3.0 Port**

USB 3.0 port is backward-compatible with USB 2.0 devices. It supports data transfer rate up to 5 Gbit/s (SuperSpeed).

▸ RS-232/422/485 Serial Port Connector

The serial port is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

RS-232

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	VCC_COM1	Voltage select setting by J1

RS-422

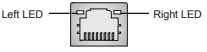
PIN	SIGNAL	DESCRIPTION
1	422 TXD-	Transmit Data, Negative
2	422 RXD+	Receive Data, Positive
3	422 TXD+	Transmit Data, Positive
4	422 RXD-	Receive Data, Negative
5	GND	Signal Ground
6	NC	No Connection
7	NC	No Connection
8	NC	No Connection
9	NC	No Connection

RS-485

PIN	SIGNAL	DESCRIPTION
1	485 TXD-	Transmit Data, Negative
2	NC	No Connection
3	485 TXD+	Transmit Data, Positive
4	NC	No Connection
5	GND	Signal Ground
6	NC	No Connection
7	NC	No Connection
8	NC	No Connection
9	NC	No Connection

LAN

The standard RJ-45 LAN jack is for connection to the Local Area Network (LAN). You can connect a network cable to it.



		Left LED (Active LED)	Right LED (100M/1000M Speed LED)
LED Color		Orange	Green/Yellow
10M Cable Plug-in	**No Transmission**	Orange (Lighting)	OFF
	Transmission	Orange (Blinking)	OFF
100M Cable Plug-in	**No Transmission**	Orange (Lighting)	Green (Lighting)
	Transmission	Orange (Blinking)	Green (Lighting)
1000M Cable Plug-in	**No Transmission**	Orange (Lighting)	Yellow (Lighting)
	Transmission	Orange (Blinking)	Yellow (Lighting)
In S3/S4/S5 Standby State		Orange (Lighting)	OFF

Audio Jack

- **Line-In (Blue)** - for external CD player or other audio devices.
- **Line-Out (Green)** - for speakers or headphones.
- **Mic-In (Pink)** - for microphones.

Connector

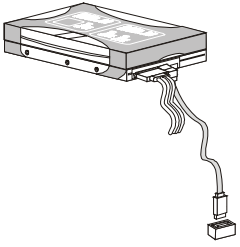
Chassis Intrusion Pinheader: CI1

This connector is provided to connect the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.

Serial ATA Connector: SATA1 ~ SATA5

This connector is a high-speed Serial ATA interface port. Each connector can connect one Serial ATA device.

SATA1~2 (6Gb/s)
SATA3~6 (3Gb/s)

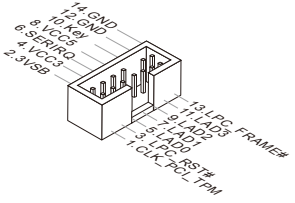


Important

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.

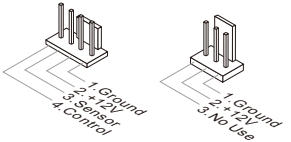
TPM Module Connector: JTPM1

This connector connects to a TPM (Trusted Platform Module). Please refer to the TPM security platform manual for more details and usages.



Fan Power Connector: CPUFAN1, SYSFAN1, SYSFAN2, SYSFAN3

The fan power connector supports system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset onboard, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



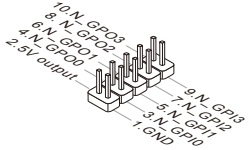
CPUFAN1 SYSFAN1~3

Important

Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.

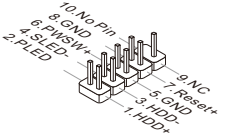
GPIO Pin-header: JGPIO1

This connector is provided for the General-Purpose Input/Output (GPIO) peripheral module.



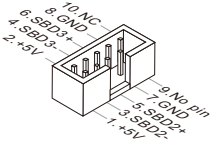
Front Panel Pin-header: JFP1

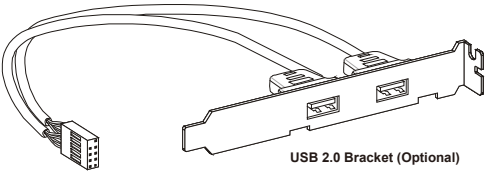
This front panel connector is provided for electrical connection to the front panel switches & LEDs and is compliant with Intel Front Panel I/O Connectivity Design Guide.



Front USB Pin-header: JUSB1 ~ JUSB3

This connector, compliant with Intel I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, modems and the like.





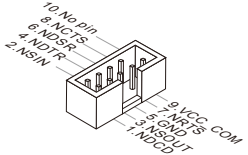
USB 2.0 Bracket (Optional)

Important

Note that the pins of +5V and GND must be connected correctly to avoid possible damage.

Serial Port Connector: COM2 ~ COM6

This connector is a 16550A high speed communications port that sends/ receives 16 bytes FIFOs. You can attach a serial device to it through an optional serial port bracket.



RS-232

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	VCC_COM1	Voltage select setting by J1

PIN	SIGNAL	DESCRIPTION
1	NDCD	Data Carrier Detect
2	NSIN	Receive Data
3	NSOUT	Transmit Data
4	NDTR	Data Terminal Ready
5	GND	Signal Ground
6	NDSR	Data Set Ready
7	NRTS	Request To Send
8	NCTS	Clear To Send
9	VCC_COM	12V or 5V power output, selected by jumper

RS-422

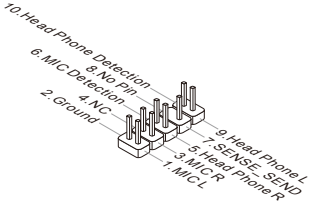
PIN	SIGNAL	DESCRIPTION
1	422 TXD-	Transmit Data, Negative
2	422 RXD+	Receive Data, Positive
3	422 TXD+	Transmit Data, Positive
4	422 RXD-	Receive Data, Negative
5	GND	Signal Ground
6	NC	No Connection
7	NC	No Connection
8	NC	No Connection
9	NC	No Connection

RS-485

PIN	SIGNAL	DESCRIPTION
1	485 TXD-	Transmit Data, Negative
2	NC	No Connection
3	485 TXD+	Transmit Data, Positive
4	NC	No Connection
5	GND	Signal Ground
6	NC	No Connection
7	NC	No Connection
8	NC	No Connection
9	NC	No Connection

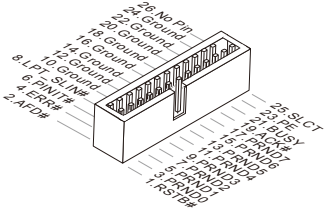
Front Audio Pin-header: JAUD1

This connector allows you to connect the front panel audio and is compliant with Intel Front Panel I/O Connectivity Design Guide.



Parallel Port Header: JLPT1

The mainboard provides a 26-pin header for connection to an optional parallel port bracket. The parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.



Jumper

Clear CMOS Jumper: CLR_CMOS1

There is a CMOS RAM onboard that has a power supply from an external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set the jumper to clear data.

CLR_CMOS1 **Clear CMOS** **Keep CMOS**

Important

You can clear CMOS by shorting 1-2 pin while the system is off. Then return to 2-3 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

ME Jumper: ME_DIS1

This jumper is used to disable/ enable the Intel AMT ME technology.

ME_DIS1 **Enabled** **Disabled**

AT/ATX Select Jumper: JAT1

This jumper allows users to select between AT and ATX power.

JAT1 AT Power ATX Power

Back Panel COM Port Power Jumper: JCOMP1

This jumper specifies the operation voltage of the serial ports on the back panel.

JCOMP1 Ring (Default) VCC5 +12V

On-board COM Port Power Jumper: JCOMP2 ~ JCOMP6

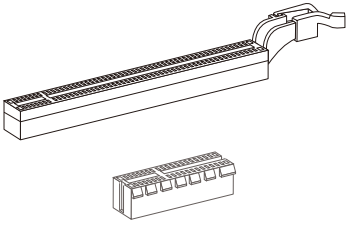
These jumpers specify the operation voltage of the onboard serial ports.

JCOMP2~6 +5V +12V

Slot

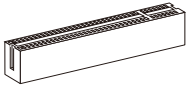
PCI-E (Peripheral Component Interconnect Express) Slot

The PCIE slot supports the PCIE interface expansion card.



PCI (Peripheral Component Interconnect) Slot

The PCI slot supports LAN card, SCSI card, USB card, and other add-on cards that comply with PCI specifications.



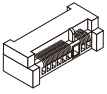
32-bit PCI Slot

Important

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

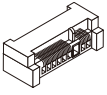
Mini PCI-E Slot

The Mini PCI-E slot is provided for wireless LAN card, TV tuner card, and Robson NAND Flash card.



mSATA Slot

The mSATA slot is provided for mSATA SSD device.



Chapter 3
BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.

You may need to run the Setup program when:

- An error message appears on the screen during the system booting up, and requests you to run SETUP.
- You want to change the default settings for customized features.

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

PRESS DEL TO ENTER SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Important

- *The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*

CONTROL KEYS

← →	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
Esc	Exit

GETTING HELP

After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

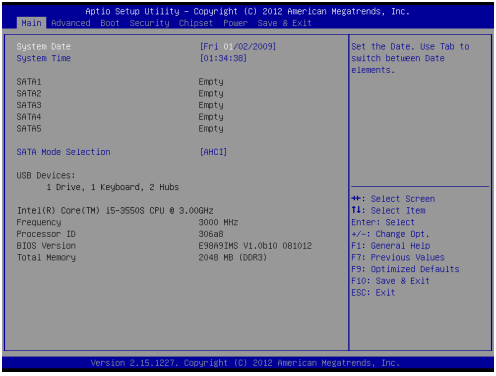
Sub-Menu

If you find a right pointer symbol appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

GENERAL HELP <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Menu Bar



- **Main**

Use this menu for basic system configurations, such as time, date etc.

- **Advanced**

Use this menu to set up the items of special enhanced features.

- **Boot**

Use this menu to specify the priority of boot devices.

- **Security**

Use this menu to set supervisor and user passwords.

- **Chipset**

This menu controls the advanced features of the onboard Northbridge and Southbridge.

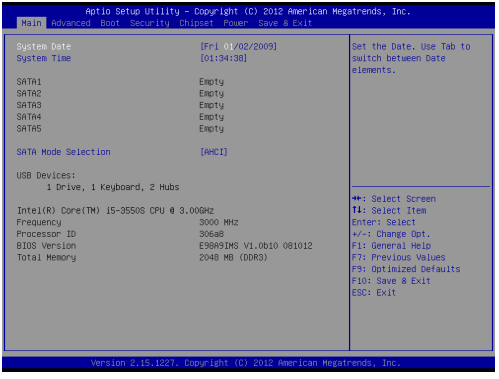
- **Power**

Use this menu to specify your settings for power management.

- **Save & Exit**

This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.

Main


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Boot Security Chipset Power Save & Exit
System Date [Fri 01/02/2009]
System Time [01:34:38]
SATA1 Empty
SATA2 Empty
SATA3 Empty
SATA4 Empty
SATA5 Empty
SATA Mode Selection [AHCI]
USB Devices:
1 Drive, 1 Keyboard, 2 Hubs
Intel(R) Core(TM) i5-3550S CPU @ 3.00GHz
Frequency 3000 MHz
Processor ID 306a8
BIOS Version E98A9IMS V1.0b10 081012
Total Memory 2048 MB (DDR3)
Set the Date. Use Tab to switch between Date elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F7: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.

▸ **System Time**

This setting allows you to set the system time. The time format is <Hour> <Minute> <Second>.

▸ **System Date**

This setting allows you to set the system date. The date format is <Day>, <Month> <Date> <Year>.

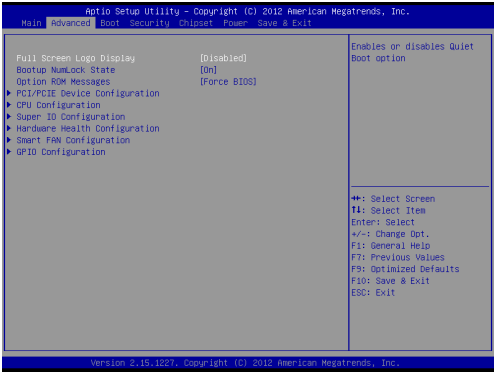
▸ **SATA1 ~ SATA5**

[Type]	Press PgUp/<+> or PgDn/<-> to select [Manual], [None] or [Auto] type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use [Manual] to define your own drive type manually.
[LBA/Large Mode]	Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads and Sectors
[Block (Multi-Sector Transfer)]	Any selection except Disabled determines the number of sectors transferred per block
[PIO Mode]	Indicates the type of PIO (Programmed Input/Output)
[DMA Mode]	Indicates the type of Ultra DMA
[S.M.A.R.T.]	This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline.
[32 Bit Data Transfer]	Enables 32-bit communication between CPU and IDE controller

▸ **SATA Mode Selection**

This setting specifies the SATA controller mode.

Advanced


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Boot Security Chipset Power Save & Exit
Full Screen Logo Display [Disabled]
Bootup NumLock State [On]
Option ROM Messages [Force BIOS]
PCI/PCIE Device Configuration
CPU Configuration
Super IO Configuration
Hardware Health Configuration
Smart FAN Configuration
GPIO Configuration
Enables or disables Quiet Boot option
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F7: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.

▸ Full Screen Logo Display

This BIOS feature determines if the BIOS should hide the normal POST messages with the motherboard or system manufacturer's full-screen logo. When it is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.

When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo.

Please note that enabling this BIOS feature often adds 2-3 seconds of delay to the booting sequence. This delay ensures that the logo is displayed for a sufficient amount of time. Therefore, it is recommended that you disable this BIOS feature for a faster boot-up time.

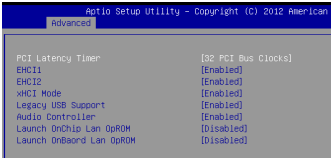
▸ Bootup NumLock State

This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

▸ Option ROM Messages

This item is used to determine the display mode when an optional ROM is initialized during POST. When set to [Force BIOS], the display mode used by AMI BIOS is used. Select [Keep Current] if you want to use the display mode of optional ROM.

▸ PCI/PCIE Device Configuration


Aptio Setup Utility – Copyright (C) 2012 American
Advanced
PCI Latency Timer [32 PCI Bus Clocks]
EHCI1 [Enabled]
EHCI2 [Enabled]
xHCI Mode [Enabled]
Legacy USB Support [Enabled]
Audio Controller [Enabled]
Launch OnChip Lan OpROM [Disabled]
Launch OnBaord Lan OpROM [Disabled]

▸ PCI Latency Timer

This item controls how long each PCI device can hold the bus before another takes over. When set to higher values, every PCI device can conduct transactions for a longer time and thus improve the effective PCI bandwidth. For better PCI performance, you should set the item to higher values.

▸ EHCI1, EHCI2

These settings disable/ enable the USB EHCI controllers. The Enhanced Host Controller Interface (EHCI) specification describes the register-level interface for a Host Controller for the USB 2.0.

▸ xHCI Mode

This setting allows user to determine the operating mode for the xHCI controller in the operation system. There are four options:

- Smart Auto: This mode is available when the BIOS supports xHCI controller in pre-boot environment. This mode is similar to Auto mode, but it is with capability to route the ports to xHCI or EHCI according to setting used in previous boots (for non-G3 boot) in the pre-boot environment. This allows the use of USB 3.0 devices prior to OS boot. When previous boot routs ports to EHCI, xHCI controller enabling and rerouting should follow the steps in Auto. Note: This would be the recommended mode when BIOS has xHCI preboot support. (Default)
- Auto: BIOS routes shared ports to EHCI controller. And it uses ACPI protocols to provide an option to enable xHCI controller and reroute the shared ports. Note: This would be the recommended mode when BIOS does NOT have xHCI pre-boot support.

- Enabled: All shared ports are eventually routed to the xHCI controller during the BIOS boot process. If BIOS does NOT have pre-boot support for the xHCI controller, it should initially route the sharable ports to the EHCI controller and then prior to OS boot it should route the ports to xHCI controller. Note: OS has to provide support for the xHCI controller in this mode. If the OS does not provide support, all sharable ports will not work.
- Disabled: The USB 3.0 ports are routed to the EHCI controller and the xHCI controller is turned off. All USB 3.0 devices function as High Speed devices regardless of xHCI software support/ availability.

▸ **Legacy USB Support**

Set to [Enabled] if you need to use any USB 1.1/2.0 device in the operating system that does not support or have any USB 1.1/2.0 driver installed, such as DOS and SCO Unix.

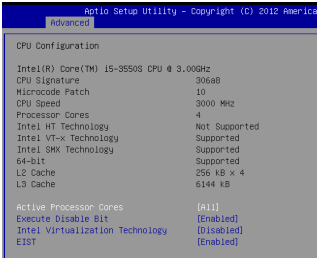
▸ **Audio Controller**

This setting enables/disables the onboard audio controller.

▸ **Launch OnChip Lan OpROM/ Launch OnBoard Lan OpROM**

These settings enable/disable the initialization of the onchip/ onboard PXE Boot ROM during bootup. Selecting [Disabled] will speed up the boot process.

▸ **CPU Configuration**



▸ **Active Processor Cores**

This setting allows user to select the number of cores to enable in each processor package. Note that this field is present only when a multi-core processor is installed.

▸ **Execute Disable Bit**

Intel's Execute Disable Bit functionality can prevent certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system. This functionality allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation.

▸ **Intel Virtualization Tech**

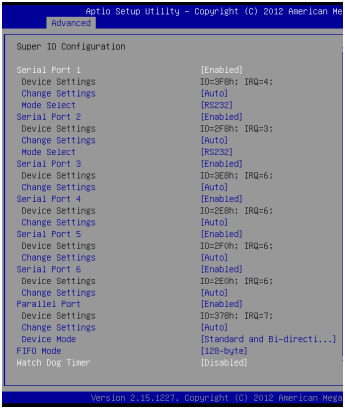
Virtualization enhanced by Intel Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple "Virtual" systems.

▸ **EIST**

EIST (Enhanced Intel SpeedStep Technology) allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production.

When disabled, the processor will return the actual maximum CPUID input value of the processor when queried.

▸ **Super IO Configuration**



▸ **Serial Port 1/ 2/ 3/ 4/ 5/ 6**

This setting enables/disables the specified serial port.

▸ **Change Settings Serial Port 1/ 2/ 3/ 4/ 5/ 6**

This setting is used to change the address & IRQ settings of the specified serial port.

▸ **Mode Select**

Select an operation mode for the serial port 1/ 2.

▸ **Parallel Port**

This setting enables/disables the specified Parallel Port.

▸ **Change Settings**

This setting is used to change the address & IRQ settings of the specified Parallel Port.

▸ **Device Mode**

Select an operation mode for the Parallel Port.

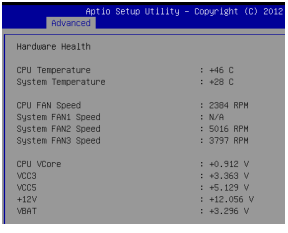
▸ **FIFO Mode**

Select a mode for the Parallel Port.

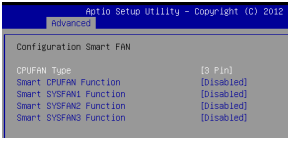
▸ **Watch Dog Timer**

You can enable the system watch-dog timer, a hardware timer that generates a reset when the software that it monitors does not respond as expected each time the watch dog polls it.

▸ **Hardware Health Configuration**


Aptio Setup Utility – Copyright (C) 2012
Advanced
Hardware Health
CPU Temperature : +46 C
System Temperature : +28 C
CPU FAN Speed : 2304 RPM
System FAN1 Speed : N/A
System FAN2 Speed : 5016 RPM
System FAN3 Speed : 3797 RPM
CPU VCore : +0.912 V
VCC3 : +3.363 V
VCC5 : +5.129 V
+12V : +12.056 V
VBAT : +3.296 V

▸ **Smart Fan Configuration**



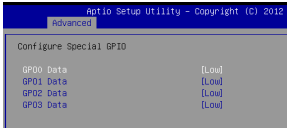
▸ **CPUFAN Type**

This setting specifies the fan type.

▸ **Smart CPUFAN, SYSFAN1/ 2/ 3 Function**

This setting enables/disables the Smart Fan function. Smart Fan is an excellent feature which will adjust the CPU/system fan speed automatically depending on the current CPU/system temperature, avoiding the overheating to damage your system.

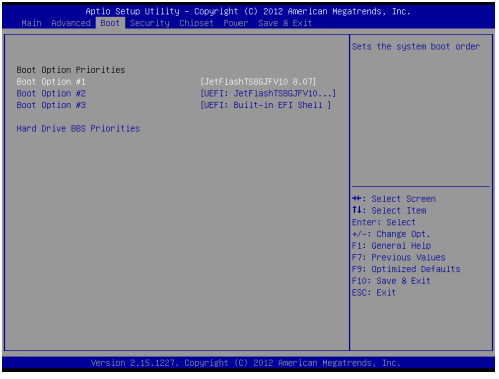
▸ **GPIO Configuration**



▸ **GPO 0/1/2/3 Data**

This setting specifies the GPO data.

Boot


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Boot Security Chipset Power Save & Exit
Boot Option Priorities
Boot Option #1 [JetFlashTS8GJFV10 8.07]
Boot Option #2 [UEFI: JetFlashTS8GJFV10...]
Boot Option #3 [UEFI: Built-in EFI Shell]
Hard Drive BBS Priorities
Sets the system boot order
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F7: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
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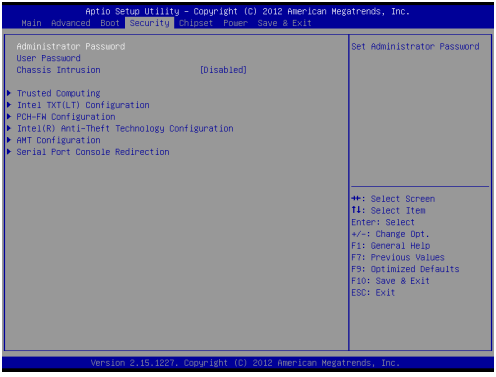
▸ **Boot Option #1 / 2 / 3**

This setting allows users to set the sequence of boot devices where BIOS attempts to load the disk operating system.

▸ **Hard Drive BBS Priorities**

This setting allows users to set the priority of the specified devices. First press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑ ↓) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

Security



▸ **Administrator Password**

Administrator Password controls access to the BIOS Setup utility.

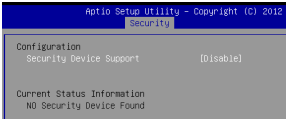
▸ **User Password**

User Password controls access to the system at boot and to the BIOS Setup utility.

▸ **Chassis Intrusion**

The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to the default value later.

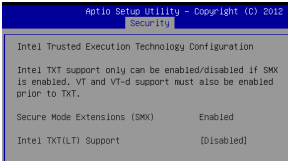
▸ **Trusted Computing**



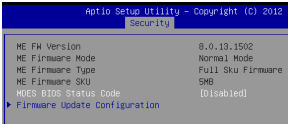
▸ **Security Device Support**

This setting enables/disables the Security Device.

▸ **Intel TXT(LT) Configuration**


Aptio Setup Utility – Copyright (C) 2012
Security
Intel Trusted Execution Technology Configuration
Intel TXT support only can be enabled/disabled if SMX is enabled. VT and VT-d support must also be enabled prior to TXT.
Secure Mode Extensions (SMX) Enabled
Intel TXT(LT) Support [Disabled]

▸ **PCH-FW Configuration**


Aptio Setup Utility – Copyright (C) 2012
Security
ME FW Version 8.0.13.1502
ME Firmware Mode Normal Mode
ME Firmware Type Full Sku Firmware
ME Firmware SKU SMB
MDES BIOS Status Code [Disabled]
Firmware Update Configuration

▸ **MDES BIOS Status Code**

This setting enables or disables MDES BIOS Status Code.

▸ **Firmware Update Configuration**

Configure Management Engine Technology parameters.

▸ **Me FW Image Re-Flash**

Enable/Disable ME FW Image ReFlash function.

Note: Enable this option if BIOS update requires an update of the Intel Management Engine (ME).

▸ **Intel(R) Anti-Theft Technology Configuration**

Aptio Setup Utility – Copyright (C) 2012
Security
Intel(R) Anti-Theft Technology Configuration
Intel(R) Anti-Theft Technology [Disabled]
Intel(R) Anti-Theft Technology Rec 3
Enter Intel(R) AT Suspend Mode [Disabled]

▸ **Intel(R) Anti-Theft Technology**

This item is used to enable/disable the Intel Anti-Theft Technology.

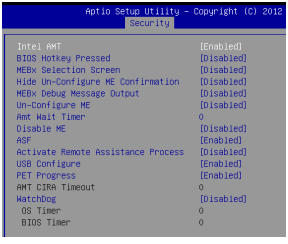
▸ **Intel(R) Anti-Theft Technology Rec**

Set the number of times recovery attempted will be allowed.

▸ **Enter Intel(R) AT Suspend Mode**

This item is used to enable or disable the request that platform enters AT suspend mode.

▸ **AMT Configuration**



▸ **Intel AMT**

This item is used to enable/disable Intel Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.

▸ **BIOS Hotkey Pressed**
Enable/Disable BIOS hotkey press.

▸ **MEBx Selection Screen**
Enable/Disable MEBx selection screen.

▸ **Hide Un-Configure ME Confirmation**
Hide Un-Configure ME without password Confirmation Prompt.

▸ **MEBx Debug Message Output**
Enable MEBx debug message output.

▸ **Un-Configure ME**
Un-Configure ME without password.

▸ **Amt Wait Timer**
Set timer to wait before sending ASF_GET_BOOT_OPTIONS.

▸ **Disable ME**
To flash BIOS ROM, the ME has to be disabled first.

▸ **ASF**
Enable/Disable Alert Specification Format.

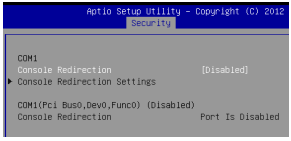
▸ **Activate Remote Assistence Process**
Trigger CIRA boot.

▸ **USB Configure**
Enable/Disable USB Configure function.

▸ **PET Progress**
User can enable/disable PET Events progress to received PET events or not.

▸ **WatchDog**
Enable/Disable WatchDog Timer.

▸ **Serial Port Console Redirection**



▸ **Console Redirection**

Enable/Disable Console Redirection feature.

Chipset

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Boot Security Chipset Power Save & Exit
VT-d [Enabled]
Primary Display [Auto]
DVMT Pre-Allocated [64M]
DVMT Total Gfx Mem [256M]
Primary IGFX Boot Display [CRT]
Secondary IGFX Boot Display [Disabled]
Check to enable VT-d function on MCH.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F7: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
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▸ **VT-d**

This item is used to enable/disable the Intel Virtualization Technology for Directed I/O. For further information, please refer to Intel official website.

▸ **Primary Display**

This setting specifies which is your primary graphics adapter.

▸ **DVMT Pre-Allocated**

This setting defines the DVMT pre-allocated memory. Pre-allocated memory is the small amount of system memory made available at boot time by the system BIOS for video. Pre-allocated memory is also known as locked memory. This is because it is “locked” for video use only and as such, is invisible and unable to be used by the operating system.

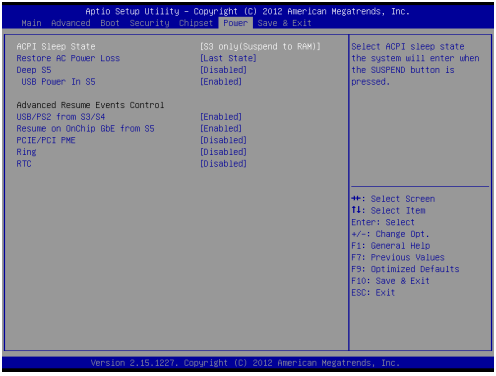
▸ **DVMT Total Gfx Mem**

This setting specifies the memory size for DVMT.

▸ **Primary/ Secondary IGFX Boot Display**

Use the field to select the type of device you want to use as the primary/ secondary display(s) of the system.

Power


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Boot Security Chipset Power Save & Exit
ACPI Sleep State [S3 only(Suspend to RAM)]
Restore AC Power Loss [Last State]
Deep S5 [Disabled]
USB Power In S5 [Enabled]
Advanced Resume Events Control
USB/PS2 from S3/S4 [Enabled]
Resume on OnChip GbE from S5 [Enabled]
PCIE/PCI PME [Disabled]
Ring [Disabled]
RTC [Disabled]
Select ACPI sleep state the system will enter when the SUSPEND button is pressed.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F7: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.

▸ ACPI Sleep State

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field.

▸ Restore AC Power Loss

This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

[Power Off]	Leaves the computer in the power off state.
[Power On]	Leaves the computer in the power on state.
[Last State]	Restores the system to the previous status before power failure or interrupt occurred.

▸ **Deep S5**

The setting enables/disables the Deep S5 power saving mode. S5 is almost the same as G3 Mechanical Off, except that the PSU still supplies power, at a minimum, to the power button to allow return to S0. A full reboot is required. No previous content is retained. Other components may remain powered so the computer can “wake” on input from the keyboard, clock, modem, LAN, or USB device.

▸ **USB Power In S5**

Enable/Disable the power of USB ports.

----Advanced Resume Event Control----

▸ **USB/PS2 from S3/S4**

The item allows the activity of the USB/PS2 device to wake up the system from S3/S4 sleep state.

▸ **Resume On OnChip GbE from S5**

This field specifies whether the system will be awakened from power saving modes when activity or input signal of onboard LAN is detected.

▸ **PCIE/PCI PME**

This field specifies whether the system will be awakened from power saving modes when activity or input signal of onboard PCIE/PCI PME is detected.This field specifies whether the system will be awakened from power saving modes when activity or input signal of onboard LAN/mini PCI-E is detected.

▸ **Ring**

These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

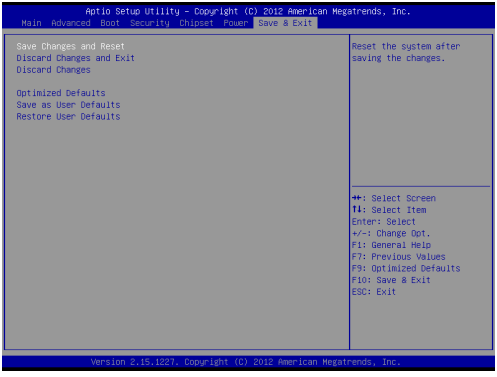
Important

- *You need to install a modem card supporting power on function for “Wake Up On Ring” function.*

▸ **RTC**

When [Enabled], your can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

Exit


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Boot Security Chipset Power Save & Exit
Save Changes and Reset
Discard Changes and Exit
Discard Changes
Optimized Defaults
Save as User Defaults
Restore User Defaults
Reset the system after saving the changes.
++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F7: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
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▸ **Save Changes and Exit**

Save changes to CMOS and exit the Setup Utility.

▸ **Discard Changes and Exit**

Abandon all changes and exit the Setup Utility.

▸ **Discard Changes**

Abandon all changes.

▸ **Optimized Defaults**

Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

▸ **Save as User Defaults**

Save all changes as user defaults.

▸ **Restore User Defaults**

Restore the preset user defaults.